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Rail-Road News.

Tehuantepec Survey.

A party of Engineers, headed by Major Bernard, with twenty-five men, boatmen, axemen, rodmen, chain carriers, &c., were to have embarked on board the steamship Alabama, at New Orleans for Vera Cruz, on the 10th for the purpose of surveying the Isthmus and tracing the railroad. They form only a pioneering party, which, as the work advances, will be enlarged in numbers. A passport had been received from the Department of State at Washington, taking under its auspices and securing protection to Major Barnard and his corps, in the expedition on which they have set out, and a similar document has been received from the Supreme Government of Mexico, signed by the minister of Foreign Affairs, addressed to the Government of the United States, and accompanied by copies of orders issued to the Governors and Military Commandants of the States of Vera Cruz and of Oajaca, directing them to extend every hospitality and facility to the engineering party referred to.

Stopping Trains by Electricity.

Messrs. H. Freeman & J. Patterson, of New York, have invented a means of stopping trains by electricity, so as to dispense entirely with the services of brakemen. The Tribune says the plan contemplates the arrangement of a Galvanic Battery on the locomotive, under the eye and hand of the engineer, with a rod running thence to each wheel in the train, connected with the battery by a touch, so as to apply simultaneously and instantly any desirable amount of pressure to every clog. It is computed that a train may be stopped in half the time now required, and with far less jarring, jerking, or wrenching of the cars. Scientific men, who have examined the plan, have certified that it is entirely feasible.—[Ex.

[We say it is neither plausible nor possible. We would like to know if the inventors have ever tried their plan on a scale of any decent size. It would take a battery as large as a locomotive to work electro-magnets of anything like the power to accomplish the objects set forth.

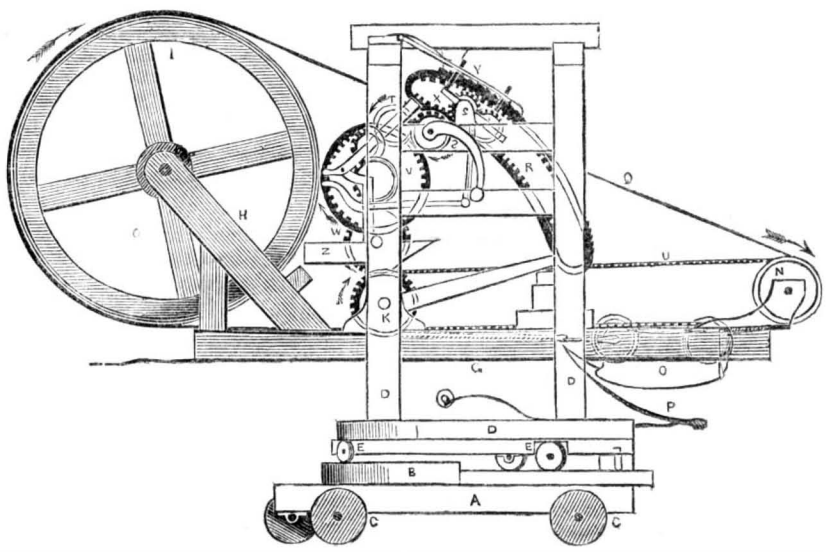
Rio Grande Survey.

Lieutenants Smith and Mechler, of the Topographical Engineers, had returned to San Antonia, and their examination of the upper Rio Grande confirms previous explorations of that portion of the river, which had been ascertained to be unnavigable for steamboats to any point higher than forty miles above Laredo. Beyond that distance there is nothing in the river to encourage a hope of a different result.

Lewistown Suspension Bridge.

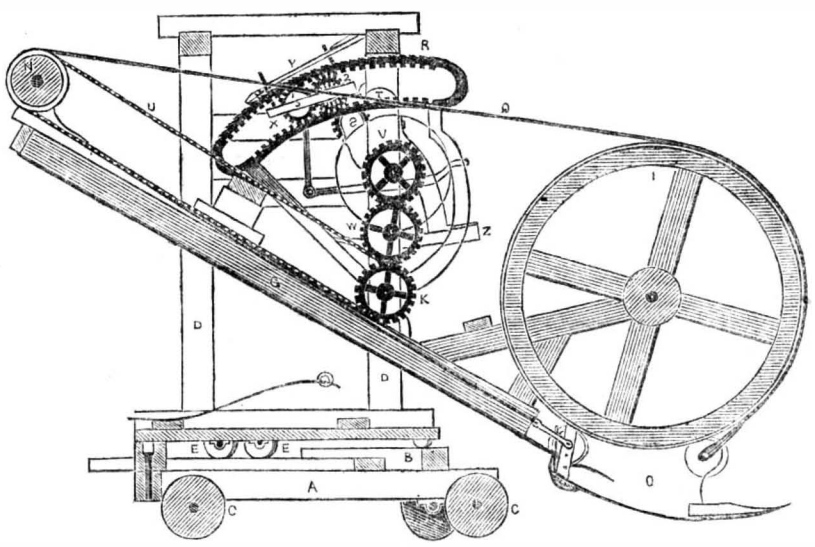
Owing to a failure of a Liverpool house to complete their contract for furnishing a large part of the cable wire, the work has been delayed. All the wire that has been yet used has been obtained from the New Jersey manufacturers.

NEWMAN'S PATENT EXCAVATING MACHINERY.---Fig. 1.



This improvement is the invention of Mr. Martin Newman, 2nd, of Lanesboro', Pa., and was patented on the 19th of last month (Nov.) The accompanying engravings are two views of the invention. Figure 1 is a side elevation; figure 2 is a longitudinal vertical section through the centre, looking from the side opposite figure 1. The same letters refer to like parts. There is a rotating drum hung on a suitable frame, and so made that it can be elevated or lowered, or moved in either direction sideways, and the drum driven in either direction by a band or chain, actuated by suitable mechanism, attached to which is the bucket or scoop, which digs out and carries away the earth; this is provided with wheels, and, while it is not upon the drum, runs upon a railway on the frame, but when it comes in contact with the drum, it has a motion in a circular direction, and at that time it is intended to perform its operation, being returned along the railway, when full, by reversing the motion of the chain; when it reaches the back of the frame the bottom opens and the dirt is discharged. A is the carriage, carrying trams, B B, and mounted on wheels, C; D D is a frame, mounted on wheels, E E, which run on the trams; it is secured on the carriage by a king bolt, and can be turned in any direction; G is a frame carrying diagonal arms, H, it is hung on a shaft or axle, K; it is capable of being lowered to any required position. When it is horizontal, the back end rests on projections within the back uprights of the frame, D. Iron rails are secured on the underside of the timbers, G, and project a short distance beyond the front end of it; their edges project and form a railway, for the scoop

Figure 2.



to run upon; I is a large cylinder or drum, hung in bearings in the arms, H. It has a recess around the edge of its periphery; N is a pulley on the back end of the frame, G, it has a recess for the chain, U, on its periphery; O is the scoop, it is formed to fit the periphery of the drum. P is its curved bottom, suspended on hinges. This scoop is made of chilled iron, to dig into the earth; it is provided with four flanged wheels to run on the rails on the lower side of the timbers, G, when not in contact with the drum. Q is a band passing round the drum, I, and the pulley, N, and is attached to the front and back of the scoop, by yokes. R is a slotted toothed sector, firmly secured to the frame, G G; its outside has a double row of ratchet teeth on it, inclined in opposite directions; S is the main driving shaft in the frame, D D; it receives motion from a steam engine in any common way; T is the shaft of a toothed pinion, gearing into V, and it has a lever frame, as shown in fig. 1; this lever carries a spindle, having two toothed pinions on it, the one gearing into the other. On the shaft of the wheel, V, is a wheel with inside teeth, fig. 1, which, by the handle or lever, can be made to gear into the pinion, S, or the pinion seen inside, above V; W is another wheel with a shaft in the frame, D, it gears with the wheel, V; K is another wheel in the frame, it has a chain pulley on its shaft; Z is a platform, on which the attendant stands, to guide the machine by the handles or levers shown. Y is a bar above the sector, on the end of which are pawls, to take into the ratchet teeth on the upper side of the sector, to keep it in any position, and steady the frame G G. To operate the machinery, the drum is brought as near to the bank as possible, with the drum, I, close to it. Rotary motion is given to the shaft, S, in the arrow, fig. 1. The other arrows indicate the directions of the other machinery. In figure 1 the bucket is proceeding forward to act on the bank; as the scoop is drawn forward, the bottom, P, will pass over a spring, seen below, like a pulley on the end of a wire, and the door or trap of it will be forced into the catch of the scoop, and thus firmly latched. When the scoop arrives at the drum, the buckets cut into the earth and it is filled, when the motion is reversed and the scoop travels back and is dumped at the end of the frame into a dirt car. The attendant operates the levers to change the gearing action for this purpose. The drum, I, can be changed in position, and this change of position is represented in the two figures above. The axles of the wheels, C C, may receive motion from the steam engine to move the machine from place to place. The steam engine should be attached on a strong side frame.

This machine can be used in many situations where a machine with a continuous chain of buckets could not operate well, as the succeeding bucket cannot dig into the same place as the one that precedes it. In the case of this bucket or scoop, its action is always in a new place, as directed by the operator, and the frame can be elevated or depressed to any position or angle, to make it scoop as required. The machinery is so combined that it is a difficult a matter to explain its operation, especially the connection of the levers with the gearing, 1 2 X S, and the sector. There are two claims on the improvements; one is for operating the scoop to act in one direction, and then to withdraw it by a back direction—a reciprocating motion—the scoop moves back faster when empty than when full or cutting. The other claim is for the manner of closing the door of the scoop by a spring, when the scoop is passing back to scoop the earth.

More information may be obtained by letters addressed to the inventor and patentee.

Shell Banks in Ohio.

Shell banks, very common in the neighborhood of Mobile, are not less singular because common. On Middle river, just above the city, says the Register, is a huge bank of shells, some twenty-five feet in depth. As far down as eighteen feet from the surface, remnants of cooking utensils evidently of Indian origin, have been found. In another place, clase by, is a bank of shells, which runs in the form of a ridge, and covers full two acres. This, by the nearest cut, is over a quarter of a mile from any water course, and at present the shells have to be hauled at least a half a mile before reaching the barges. In Bonne Secour Bay, is a huge hill of oyster-shells, over thirty feet high, and from which vast quantities of lime have been already made, yet has the consumption only heretofore seemed to cut a wall-like face to the mound. But the shells found in the city are of a clam kind, varying from the largest to the smallest size. The southern people make excellent roads with these shells.

Corregio, the illustrious painter, is said to have been born and bred, and to have lived and died in extreme poverty. It is stated that he came to his death at the early age of forty from the fatigue of carrying home a load of half-pence paid for one of his immortal works.

Dr. Franklin's father had 17 children; he was the 15th. His father died at the age of 89, and his mother at the age of 85, and that neither were ever known to have had any sickness except that of which they died.

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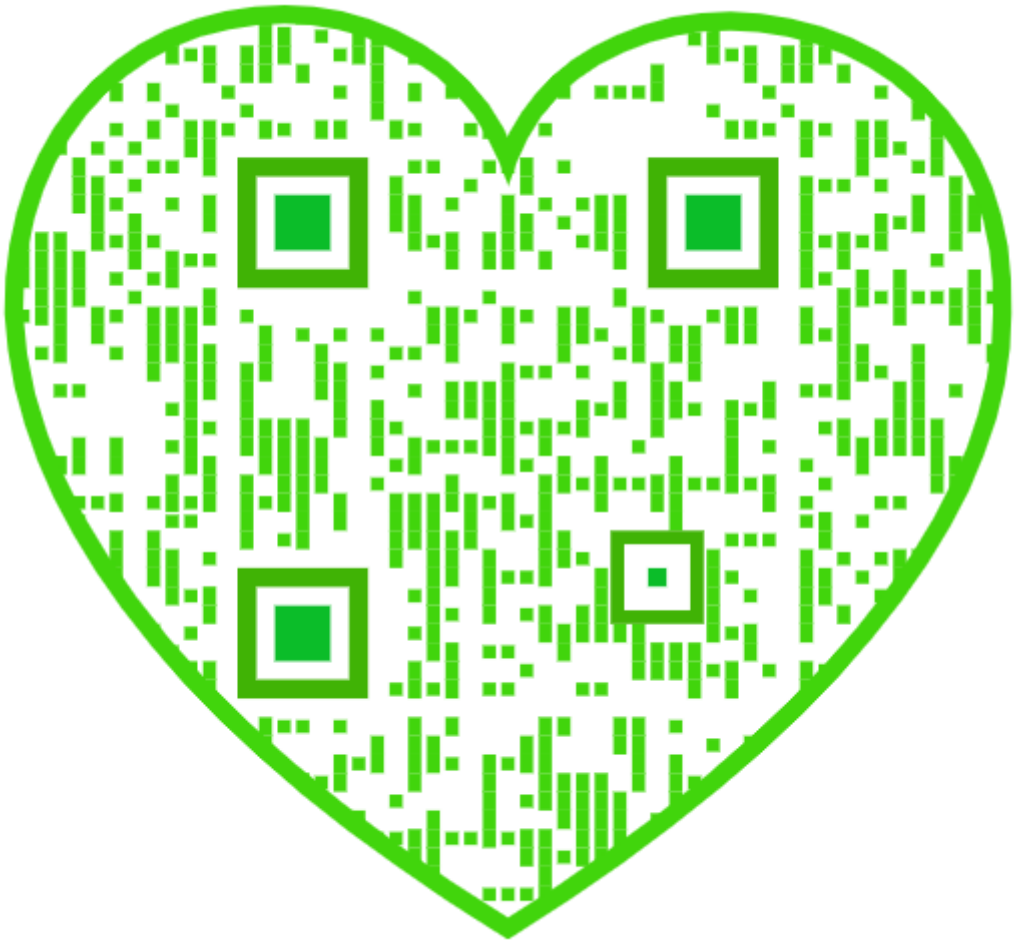

Miscellaneous.

Bee Hives.

In the construction of bee hives and the cultivation of bees, if we may judge from the English and American books of the present day, on that subject, it would appear that for many years we have learned little or nothing that is new in the character of this interesting class of animals. The English books, written in the meantime, are little more than mere copies of each other, without adding much to our existing stock of knowledge. The information of our people, whose knowledge is derived from such sources, must of course resemble its original. On the other hand, those who have not read books at all, but have confined themselves to their own apiaries, without even knowing what others, beyond their contiguous neighbors, have done, have generally groped in darkness, for the want of a little philosophy to guide them in their researches. Hence, it happens that in our Southern and Middle States, abounding in the bee-moth, inventors have exhausted their brains and their purses in inventing moth traps, all of which, in practice, have failed to accomplish the object. Instead of studying the character and habits of the bee and of the moth in their different stages, and thus learning, by experiment how far, and in what circumstances the bee is able to resist the encroachments of the moth, they have been satisfied with battling the full grown miller, with traps and gins, and luring signal lanterns, that have proved in all cases unsuccessful. Even if it be admitted that a trap secures the majority of the moths, a single one will deposite her hundreds of eggs, and thus introduce her progeny and defeat the whole aim and object of the traps.

Some twelve or fifteen patents have been granted for devices, or traps, to catch the bee-moth, and as many more applications rejected in the course of ten or twelve years—a space which covers the history of moth traps in this country.

It would be out of place for me to attempt writing an essay on the cultivation of bees. But when inventors are seeking remedies for defects in channels where it is known that the search must be unsuccessful, it is but proper that their attention should be turned out of a course so evidently wrong, that time and labor may no longer be wasted in unsuccessful efforts.

The moth or miller deposits her eggs in the crevices about the hive. She does not seek to enter where the bees are. It is obvious, therefore, that the first aim should be to prevent any crevices existing where eggs could be deposited, and the enemy allowed to harbor in. There is, perhaps, no application of science to the useful arts so much needed as in this very case. If the agriculturists of our country twelve years ago, instead of devoting twelve years to the invention of mere fly traps, had applied themselves to the study of the character and habits of the bee and the moth, they would, in this manner, have rendered these subjects as familiar as moth traps are now. But as it is, the mass of inventors have studied the devices of moth traps in their work shops and have hardly enquired into the character of the animals to be caught.

What is most needed at the present time in the cultivation of the honey bees, so far as it regards the protection of these animals from the insects infesting the hives, is a good work, giving an accurate account of all the insects which are known to infest bee-hives in the United States, their habits and peculiarities, the genus and species of each, the means they have of protecting themselves from the weapons of the bee, and under what circumstances the bee becomes overpowered by them. These facts and conditions once clearly set forth, would enable the apiarian to construct bee-hives and apply his skill to some useful purpose.

Those who desire to know what is doing at the present day in other countries, will find that a large amount of information is pour ed forth from the German press, but unfortunately little of this is translated into our own language.

With regard to the history of the bee-moth, the reputed principal enemy of the bee in this latitude, I have been permitted to avail myself of the knowledge of a friend, who is a naturalist of note in our country, and who has devoted many years to the subject of Entomology, and whose remarks appended hereto are worthy of consideration:

"The natural duration of life in the honey-bee is about one year. The offspring of the first swarm will continue to occupy the same hive for an indefinite period, but they deteriorate in numbers and vigor, while those which occupy newer and cleaner hives are known to improve; attempts to recruit the old hive with other swarms, is like 'putting new wine into old bottles,' and seldom answers a good end.

Many applications for patents are made for devices intended to prevent the separation of bees as their progeny increases, by enlarging the hive, but as each generation seeks to establish an independent household, any measure taken to prevent this natural course must be attended with disorder in the family. The parents in such cases will be hampered and the young dispirited; colateral hives appear to be the most successful. The natural proportion of the sexes and their progeny cannot be governed by the ingenuity of man without danger to the regularity of succession; hence all attemps to reduce the number of drones, or in other words, the male bees, must be regarded as prejudicial.

The bee-moth, (Galleria cereana of Fabricius,) so much dreaded by apiarians, was first brought to this country by the early immigrants from Europe, with their bees. It varies so much in size and appearance that many names have been given to it, even by experienced entomologists. Thus even Linnæus named the male Tortrix Cereana, and the female Tinea Mellonella. Consequently it will be seen that all the moth traps predicted to be good, upon their size being such as to admit and detain the moths, and not the bees, can be of little avail.

Two broods of the moth appear in the course of the year, one being in the perfect or moth state in April, and the other in August; hence, to guard against their depredations, the hives should be guarded most carefully in those months. The dread of these insects is, however, greater than they deserve, their injuries being more imaginary than real.—The larvæ of the moths feed principally on old combs which have been long in use, and in old hives where the bees are few and weak, consequently if the bees are in a healthy condition, with proper accomodation, little food or room will be left for the larvæ of the moths, their injuries arising rather from the weak and inefficient state of the bees—being an effect, not a cause."

[This is the article taken from Examiner Gale's Report, to which we referred two weeks ago.

Discovery of another Mammoth Cave in Indiana.

The New Albany (Indiana) Ledger has the following:—We are just informed by N. J. Coleman, Esq., who has recently visited the great Indiana Cave, that another immense cavern has been discovered, opening from the original cave, which, in extent, curiosities, and mineral productions, far surpasses the old cave. Mr. Coleman discovered an aperture, just before reaching Jacobs Ladder, into which a large man could hardly enter, and desired the party which accompanied him, to explore it. The guide and two or three of the party objected, as the aperture appeared to descend rapidly, and they feared that they might meet with bad air. By a little persuasion, however, they were prevailed upon to descend some forty feet, when, to their great astonishment, they found themselves in an immense apartment.

They immediately determined to fully explore the cave they had discovered. They found that this room opened into others, and these into still others, and that apparently there was no termination to the cave. They followed the main passage some four or five miles, according to their best calculations, when they were admonished by their lights that they must return. On their way back they visited some of the rooms which they passed, in which were found large beds of epsom salts, in nearly a pure state. We are also informed that the cave contains fine specimens of saltpetre, plaster of paris, alabaster, &c., of which the party procured many fine specimens.

We can now say to our sister State, Kentucky, that Indiana has a cavern which far surpasses the Great Mammoth, as the last discovery, in connection with the great Indiana cave, will make it one of the largest in the United States. It is about eleven miles from Corydon, in the south west direction, and about seven north of Levenworth.

Gilding Solution.

Dissolve any quantity of gold or platina in nitro-muriatic acid, until no further effervescence is occasioned by the application of heat. Evaporate the solution of gold or platina, thus formed, to dryness, in a gentle heat (it will then be freed from all excess of acid, which is essential), and re-dissolve the dry mass in as little water as possible: next take an instrument which is used by chemists for dropping liquids, known by the name of separating funnel, having a pear-shaped body, tapering to a fine sharp point, and a neck capable of being stopped with the finger or a cork, which may contain a liquid ounce or more; fill it with liquid about one quarter part, and the other three parts must be filled with the very best sulphuric ether. If this be rightly managed, the two liquids will not mix. Then place the tube in a horizontal position, and turn it round with the finger and thumb. The ether will very soon be impregnated with the gold or platina, which may be known by its changing its colour: replace it in a perpendicular position, and let it rest for twenty-four hours; having first stopped up the upper orifice with a cork. The liquid will then be divided into two parts—the darkest coloring being underneath. To separate them, take out the cork and let the liquid flow out: when it has disappeared, stop the tube immediately with the cork, and what remains in the tube is fit for use, and may be called gilding liquid. Let it be put into a bottle and tightly corked.

The muriate of gold or platina, formed by digesting these metals in nitro-muriatic acid, must be entirely free from all excess of acid; because it will act too forcibly on the steel, and cause the coating of gold to peel off. Pure gold must be employed: the ether must not be shaken with the muriate of gold, as is advised in chemical publications, for it will be sure, then, to contain acid; but if the two liquids be brought continually into contact by the motion described, the affinity between ether and gold is so strong as to overcome the obstacle of gravity, and it will hold the gold in solution. The ethereal solution may also be concentrated by gentle evaporation.

Bermuda Corals.

Corals are immensely various and exceedingly beautiful. In the immediate vicinity of Bermuda is a field of corals, some twenty miles by ten in extent, which, seen through water several feet deep and perfectly transparent, presents an object of great beauty and richness. The prisoners at that English establishment are frequently employed to procure by diving, specimens of coral from that exhaustless field of beauty and richness, which are sent to numerous cities and individuals upon both continents for ornaments upon mantel pieces. In many places coral rock is used as the only building material. For forts it is probably preferable to any other material. It is more difficult to shatter by cannon balls than any other rock. Though not hard, it is tough. Coral is the carbonate of lime. The Potomac marble, used for the pillars in the assembly chambers in the American Capitol, is calcareous pudding stone. It is composed of pebbles of the carbonate of lime, of various sizes, from that of a man's head to grains smaller than a pea.

Wheeling Bridge Case.

Chancellor Walworth, says the Cincinnati Chronicle and Atlas, has finished taking depositions in that city and Louisville, respecting the Wheeling Bridge case. He is making a thorough and searching investigation, and his report upon the question submitted to his judgement is expected to be an able and reliable one.

Probable Detention of Two Americans in Paraguay.

A correspondent of the New York Courier says: Messrs. Edward A. Hopkins, son of Bishop Hopkins, of Vermont, and George A. Brandreth, son of Dr. B., of New York, had left San Borja, in the beginning of February, for Assumpcion, Paraguay. They took with them a guide and a couple of mules, leaving the bulk of their merchandise, which could only be introduced after obtaining a special permission from Lopez, the President of Paraguay. Although only eight or ten days are necessary for a journey from San Borja to Assumpcion, and Messrs. H. and B. left with the intention of returning immediately for their merchandise, nothing had been heard of them up to the time of the correspondent's leaving, a period of five months. The general opinion in San Borja is that they are detained by President Lopez.

[We hope to hear of the safety of these young gentlemen yet. Mr. Hopkins was a splendid fellow. Tall, powerful, and a match for more than a few Paraguay natives in fair contest. He called upon us when here, three years ago, to get a good mill-wright to go with him to South America, where he had been before.

Improvement for Working Butter.

Miss Lettie A. Smith, of Pineville, Bucks Co., Pa., has invented and applied for a patent for a very useful improvement on an apparatus for working butter; it consists of a stationary frame, with an adjusting one secured to it, in which is hung the butter pan, which has a draining spout at one corner, running down underneath, to carry off the pressed out buttermilk. The pan can be set in a moment, to any inclination, to allow the operator to work the butter as may be desired, and to drain off the milk, &c. The improvement is on the adjusting frame in combination with the stationary one.

Forms of Matter.

Draw a circle by a pair of dividers. Not changing the distance of the legs, place one point in the circumference of the circle drawn, dividing it into equal parts. It will thus form in the circumference six points equally distant from each other. Unite these points by lines drawn by the dividers, and the result will be a regular hexagon, showing the shape of basaltic columns, quartz, crystal, beryl, emerald, apatite, cells of the honeycomb.

Currents of the Ocean.

Captain Foster, of the steamer Alabama, informs Lieutenant Maury that a short time since a bottle was picked up on the east side of Old Providence Island, in the West Indies, twenty-two months after it had beeu thrown overboard off the Cape of Good Hope. But by for being cast ashore here, this solitary cruiser would probably have entered the Gulf Stream, and then it might have been cast up on the shores of Europe.

The investigations of the currents of the sea, which are conducted with so much labor and patience at the National Observatory, have led to some curious and interesting discoveries. Among these we are informed that there is reason to believe in the existence of a current from the Red Sea around Cape Horn thence through the West Indies, and by way of the Gulf Stream, to the English channel; and, moreover, that this current from the Red Sea divides itself from the other side of the Cape of Good Hope, one part of which passes around this Cape to the West Indies, as in the case of the Old Providence bottle, while the other portion passes south of New Holland, thence in a southeast direction to the regions of the ice or land of the Antartic. Being here deflected it returns to the north, as the ice-bearing current which enters the Atlantic on this side of Cape Horn.

Bottles that have been thrown overboard into this current have been picked up on the Irish shores.

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For the Scientific American.

The Voltaic Battery.---Electrotype.

NUMBER VII.—(CONCLUDED.)

There are three conditions of the metal deposited in the battery process—the black deposit, the ductile and the crystaline. In the number on Gilding, the cause of the black deposit was shown to be a too rapid battery action for the quantity of metal held in solution in the vicinity of the surface receiving the deposit. A few moments' attention to some general properties of bodies will show the conditions which produce the ductile and crystalline desposits.

All solid bodies are amorphous or crystallized, and as the same substance is found both crystalized or amorphous, it is evident that all substances have an inherent tendency to arrange their particles in a symmetrical manner, which produces the crystal. But this symmetrical arrangement looks to mobility of the particles, and molecular mobility can exist only in fluids. A great many substances, when melted and left to slowly cool, become crystallized; this is daily seen in sulphur, zinc, and brass. But it is not necessary that fluidity should be attained by fusion alone, for when substances are dissolved in a liquid, and again slowly brought to the solid form, by evaporation of the solvent, the crystalline forces produce beautiful figures. Now, as inthis kind of crystallization, each particle, when deposited, must be immovably fixed, there must exist a force which determines where the deposit shall take place, as the solvent is removed and the particle again brought to the solid form; all the salts are crystals formed by evaporation—but there are many substances which cannot be deposited by evaporation, but are easily deposited by the elective energy of the voltaic force; in this mode of deposition the crystalline tendency is very operative. To crystallize by the battery it is only requisite to bring the substance to the solid form, so slowly that the crystalline forces shall have time to arrange the molecules. In this manner large and beautiful crystals of the metals, and some precious stones, have been formed; a gentleman in England obtained magnificent crystal arragonite, even, from a brick-bat, by the slow and continued action of a battery.

Now we have the whole secret of making good metal by the voltaic process. The deposition must not be so fast that the solvent shall not have time to get away from between it and the surface receiving the deposit; nor must it be so slow that the crystalline forces shall have time to arrange the molecules, for one crystal does not adhere firmly to another, and, consequently a plate of metal, in which the crystalline forces have prevailed, will break like a cake of sand; or, if these forces have operated but slightly, the plate will be soft and brittle. But when the reduction has taken place in the proper manner, the metal is generally equal to the ordinary sheets of rolled metal, but now and then a plate can be obtained equal to the rolled and hammered metal prepared for the engraver.

To give specific directions for the battery arrangement, for producing ductile metal, would be almost impossible, for the conditions vary with every different-sized plate, with every different strength of the solution, with the change of temperature, and the distance between the solvent and receiving plates; in general, with such a solution as recommended, the platinized surface should be twice as great as the receiving plate, the distance between the plates one inch, and the temperature 70°. But experience alone can direct the judgment as to the precise arrangements. After having obtained those conditions which give the ductile metal, the great thing, then, is to maintain those conditions; this will consist, chiefly, in the management of the battery; this we have already described; a successful management of the battery will, in general, be successful electrotyping.

For all objects less than one square foot, a single Smee's battery may be sufficient, but if the plate is larger than this, two batteries may be joined for intensity; and intensity arrangement is found to cause the copper to grow very fast over a black leaded mould; but, after the mould is covered, a single battery may be used.

Chemistry of Madder.

We have seen a number of articles in exchange papers, relative to the cultivation of madder in America. We have heard that a considerable quantity of madder is raised every year in Ohio, but we not know how much. There can be no doubt but it can be grown profitably in many of our States. Madder is a dye drug and paint, (in the form of a lake,) and has long been known and used for these purposes. Madder root grows on light soils and is reaped overy three years in France, and every five in Turkey. The roots are dried in the open air or in stoves, and then either ground or merely deprived of their dirt, fibres, &c. by rubbing and winnowing. When the roots are ground they bear the name of madder; when they are in their entire state they are called Turkey roots. The coloring principles are not diffused throughout the root, but are found between the outside root and the middlefibrous parts. It is grown in various countries, Turkey, France, Holland &c. Dutch madders, although inferior to French, for red or pink dyeing are nevertheless good for chocolates or purples: they are generally recognised by being coarser ground than the French. Dutch madder improves in quality by being kept two or three years: after that time it gradually losses its properties. Madder, when kept for a long time in casks, ferments and sometimes increases sufficient in bulk to burst them; and it becomes so hard by long keeping, that it is necessary to have recourse to a pickaxe to remove it from them. One hundred parts of madder root gives on an average about twenty parts of madder. Boiling water does not dissolve all the coloring matter of madder, a certain amount remaining fixed; but alcohol removes nearly all the coloring matter. It was formerly believed that there were three coloring principles in madder: the red, alizarine; the purple, purpurine; and the yellow, xanthine. In 1837, a French botanist discovered, by microscopical investigation, that there is but one coloring principle in madder, which is yellow, and that the other colors are produced by oxidation of this yellow principle: Mr. Girardin afterwards confirmed this statement by chemical investigations. Alizarine is the red coloring substance and the important one. It crystalizes in fine needles slightly soluble in cold and boiling water, and is freely soluble in alcohol, ether, and the alkalies; it communicates to the latter solutions a splendid purple color, which can be removed by precipitating it, unchanged, with an acid. Rubiacine, which is identical with the purpurrine of Robiquet, and with the pink of Persoz, does not communicate any color to mordanted cloth. Rubian, the bitter principle of madder, is volatile, and does not crystalise. Xanthine, the yellow coloring substance, is very soluble in water, and gradually oxidised, it becomes brown; and it is this coloring principle which, by imparting a dirty brown color to non-mordanted cloth when boiled with madder, and which, by spoiling the fixed colors, becomes the chief cause why dyed goods undergo so many processes of clearing before the white parts, and the colors fixed on them are sufficiently clear to bring them to the state required for the market. Pectic acid is the acid which plays a great part in dyeing with madders, for if in excess, it removes a part of the mordant, and thus it injures the colors, on account of which it is often necessary to neutralise it in the dye-baths by adding chalk; this is to be done with some species of madders, for all do not require chalk, seeing that they already contain a sufficient amount in their roots. A good quality of madder gives nine per cent., a middling quality about twelve per cent., of residue: if a much larger amount is obtained, it is a sign of adulteration. The way to try madder is to test that suspected to be adulterated, with one of a known quality. Of each of these a given quantity is taken, and put into equal bulks of water, together with equal weights of mordanted cloth: thus for example, 150 grains of each madder is put into one pint of water with a hank of yarn or strip of cotton cloth weighing 80 grains; the temperature of the water is gradually raised, during two hours, to the boiling point, when the whole is then boiled for ten minutes. The fents are taken out, washed in cold water soaped once or twice (with or without muriate of tin), washed, dried, and compared. Within a few years, a substance produced from madder, termed garancine, has come into somewhat extensive use in calico madder printing. Two French chemists, Messrs. Robiquet and Caventon, were the first who manufactured garancine, in 1827. It was regarded for many years as a purely scientific product; but after several successful applications of it in one or two houses, it became generally used as a dyeing matter in 1839, since which time its application in the art of calico printing has extensively increased. Garancine is made by treating madder with sulphuric acid, the washed product of which is garancine. In dying Turkey-red, the residue of the madder bath was a dead loss. In some works, the refuse was piled up in useless huge banks. This is now no more all loss: it is treated with sulphuric acid in a steam box and garancine is the result. This useful discovery was made by Mr. Schwartz, a chemist, who secured a patent for its manufacture in France, in 1843. Garancine is an amorphous reddish brown powder, nearly insoluble in cold and boiling water; and although it is also insoluble in acids, it becomes soluble in water if an alkali is present, viz. potash, lime, chalk, &c. Alum acts rapidly upon garancine, by dissolving the coloring matter. Alcohol, or spirits of wine, by repeated boiling, is capable of dissolving all the coloring matter of garancine: it is made from good madder as follows:—After washing the madder with acidulated water, which dissolves the gum, sugar, xanthine, and pectic acid, the mass is pressed, and one part of vitriol diluted with one part of water, should be mixed with it, the temperature not being allowed to rise above from 140° to 170° Fahr., for if it does, some of the coloring matter will be destroyed; the amount of vitriol must vary in accordance with the species of madder employed, as they contain various amounts of alkaline earths; nevertheless, after having kept the mass at the said temperature for several hours, it must be washed with water until nearly all the acid is removed chalk and carbonate of soda are added to neutralize the last portions of acid, and after being washed, dried, ground, and sifted, it constitutes commercial garancine.

Garancine, or garanceaux, as it is sometimes called, which is made from spent madder, is produced as follows:—The grounds of the liquor from the madder bath are treated with weak sulphuric acid to prevent them fermenting, after which the liquor is drained off, the stuff well pressed, and for every 400 lbs. of it, 50 lbs. of the oil of vitriol is added; these, after being well mixed together are placed in a double-bottomed lead cistern, the leaden plate of which is perforated with holes, and placed five or six inches from the bottom. A current of steam is introduced between the leaden plate and the bottom, and is passed through the acid mass for two or three hours; then the residue is first washed with water, and, secondly, with water containing a little chalk or carbonate of soda; lastly, it is again washed with water alone, dried, ground, and sifted. Garancine has several advantages over madder in dyeing. First, it does not soil the white parts of the print and make them of such a dirty brown color as madder—consequently the dyer has not so many consecutive processes to have recourse to in order to remove the coloration of the white parts, since in dyeing with garancine the whites are very little colored, and it is only necessary to pass the pieces into bran and water, heated to 170° Fahr., to have them perfectly clear. Secondly, a further economy is effected, on account of one part of garancine having as much tinctorial power as about three parts of madder. Lastly, the colors produced by garancine are much brighter than those by madder, the pinks and reds having none of the yellow appearance sometimes to be observed in madder colors, and the chocolate color produced by garancine is far superior to that from madder. Still, there is one disadvantage in these colors, which is, that they are not so fast as those of madder, and they cannot withstand the action of boiling soap and water. The quantity of garancine required to dye a piece of cloth varies from one to two pounds and a half, according to the style of pattern to be dyed. The process of dyeing is nearly the same as with madder, the pieces being put into the dye-becks when the water is heated to about 100°; the temperature is afterwards gradually raised to 170° for an hour and a half, when the bath is boiled for a few minutes. To finish them, it is only necessary to wash them with hot water, or to heat them in a bath of water and bran to 170°, allowing them to remain in until their white parts are perfectly clear. Although it still remains a disputed question as to the beneficial influence of chalk in dyeing with some kind of madders, the influence of alkalies in the case of garancine is sufficiently marked to prevent any doubts upon the subject, for when it is attempted to dye with alkaline waters, it is impossible to obtain good genuine colors; if, for example, the water contains bicarbonate of lime, it immediately colors those parts which should remain colorless, and the colored parts are inferior. In order to remove the difficulty with the white parts, the cloth has to be subjected to several boilings, &c., which tend not only to injure the cloth, but also the colors fixed upon it. When garancine is well prepared, neutral water is the best to make use of; but when the garancine is acid, a certain amount of chalk must be employed to neutralize the acid. When the water is alkaline, a certain amount of acid can be advantageously made use of. Oxalic acid is the one principally employed, owing to its property of forming with lime an insoluble and inert compound. Madder lakes for painting are generally prepared by first washing the madder, to free it from all soluble substances, and then boiling it with alum; caustic potash or soda is then added with great caution. The coloring matter which combines with the alumina is thus precipitated, which is then carefully washed and dried—this deposit is the ordinary madder lake.

Madder is used to dye drabs, salmons, and many colors. The above relates principally to its employment in the art of Calico Printing.

Beautiful Varnish.

GENTS.—I noticed in your most excellent paper of the 2nd of Nov. last, that some gentleman had seen a fine specimen of enamel varnish on some Talbotypes, and wishes to have a good varnish of a similar kind. For the benefit of the readers of the Scientific American I furnish the following original recipe for a varnish, which, when spread over any picture or painting, will preserve the same better than anything else I have ever seen: it is as follows:—Take honey, 1 pint; the whites of two dozen fresh hen's eggs; 1 oz. of good clean isinglass; 20 grains of hydrate of potassium; ½ oz. of chloride of sodium—mix together over a gentle heat of 80 and 90 degs. Fahr.; be careful not to let the mixture remain long enough to coagulate the albumen of the eggs; stir the mixture thoroughly, then bottle; it is to be applied as follows—one table-spoonful of the varnish, added to half a table-spoonful of good oil of turpentine, spread on the picture as soon as mixed.

J. P. HENDERSON, M.D.,
Editor of the Era.

Farmsville, La., Dec. 1st, 1850.

[We thank our brother Editor for his kindness.

Poisoned by Eating a Worm.

A small boy was poisoned to death in Munson, last week, by eating a part of a worm in an apple. He dropped the apple, and complaining it did not taste good. In a short time his mouth began to swell, and in two hours he was dead. His parents picked up the apple, and upon examination, found in it a portion of a worm, known in common parlance as the thousand legged worm. We did not learn the name of the boy.—[Clarion (O.) Dem.

The above is a singular case, we can scarcely give full credit to its truthfulness.

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New Inventions.

Improvements in Printing.

The following account of a recent improvement in printing, is taken from the New York Sun, and is well worthy of attention :

"We are informed that a gentleman in this city has recently invented an improvement in printing, which seems likely to cause a general revolution in the art, greatly simplifying the mode and wonderfully reducing the cost.

It is generally admitted, among inventors and printers, that no mechanism for sticking types, can be made, without being so exceedingly complicated, as to render its use of no benefit.

The unsolvable problem, however, is likely to be dropped without solution, and without any being required, for the invention we are now about to describe does away with the use of movable types ! In the casting of the present types, a die or matrix, in which the letters are cast, is first struck in copper, by means of steel punches. Into this matrix the molten metal is poured, and on cooling, the moveable type is thrown out, perfectly formed. The making of these steel punches is an art requiring the utmost skill and care, as may be judged from the perfection with which every letter, even of the smallest sized type, appears in print.

It is found that a steel punch can be made, which will produce a raised letter, on a flat surface of copper, or other soft metal, as well as one leaves the letter sunken. And the principle of the new invention is based on this simple fact. The operation of the improvement is as follows : A set of steel punches are made, corresponding with the alphabetic letters, figures, and points now in use, which when struck on copper, leave a raised impression, instead of intrblio, or sunken—being exactly the reverse of the present mode. Now for instance, by striking the punch S, upon a smooth piece of copper, and then U, and then N, the word SUN is produced upon the copper plate in relief, or raised, and impressions may be printed therefrom.

A sheet of copper one-eighth of an inch in thickness, and as wide, we will say, as one of our columns, and as long, is prepared with its surfaces perfectly polished and flat. It is introduced into a machine having a series of keys, answering to the alphabet, arranged somewhat like a piano. The mechanism of the instrument is so arranged, that by pressing one of these keys, a letter of the alphabet is produced, in relief, from the copper plate ; and on another key being pressed, another letter is produced immediately adjoining the first letter, and on a true line with it and so on, until a line of letters extending across the breadth of the copper-plate, has been made. The machine is so arranged, that as fast as one line of letters is made, the copper-plate is moved a notch, and another line follows, struck by the keys, letter by letter, as before; and so on until a whole column of letters is produced, or until the sheet of copper is, as it were, converted into a stereotype plate, ready for printing."

[The punches in this case must first be set up or arranged to produce the same effect as the type setting, and then they have to be acted on by equal evenly pressure to produce a perfect surface for printing. We see how the latter could be done, but the former we believe, never can be done to compete in economy with common types.

Prizes.

We perceive, by the proceedings of the South Carolina Institute, at Charleston, that a gold medal was awarded to I. F. Brown, of Columbus, Ga., for his Saw Filing Machine. This machine was illustrated and described on page 228, Vol. 4, Sci. Amer. A silver medal was awarded to Mr. A. J. Nippes, of Philadelphia, for the best Breech-loading Rifle. This rifle was illustrated and described on page 193, Vol. 5, Sci. Amer. Both inventions are good, and have been patented. We also perceive that our friends, E. T. Taylor & Co., Columbus, Ga., received a silver medal for the best Cotton Gin.

Copying Electric Telegraph.

A late English paper says—Mr. F. C. Bakewell has invented a very ingenious telegraph, which bids fair to rival, if not to excel, the discoveries of Soemmering, Davy, Morse, and Bain. Not content with the mere transmission of messages, Mr. Bakewell proposes by his telegraph to secure a *fac simile* of the hand writing in which it is conveyed. The machine may be constructed so as to diminish or magnify the characters of the original communication, and it can be applied to printed matter with even greater facility than to what is written. If brought into actual operation, this discovery will be available with the present wires and voltaic battery.

[Mr. Bain exhibited this telegraph two years ago, in this city. Bakewell is not the inventor. It will never be worth much at any rate.

Novel Boiler Feeder.

Mr. Benaiah Fitts, of Manchester, N. H., has taken measures to secure a patent for a boiler-feeder, which operates by the expansion and contraction of a tubular reservoir.

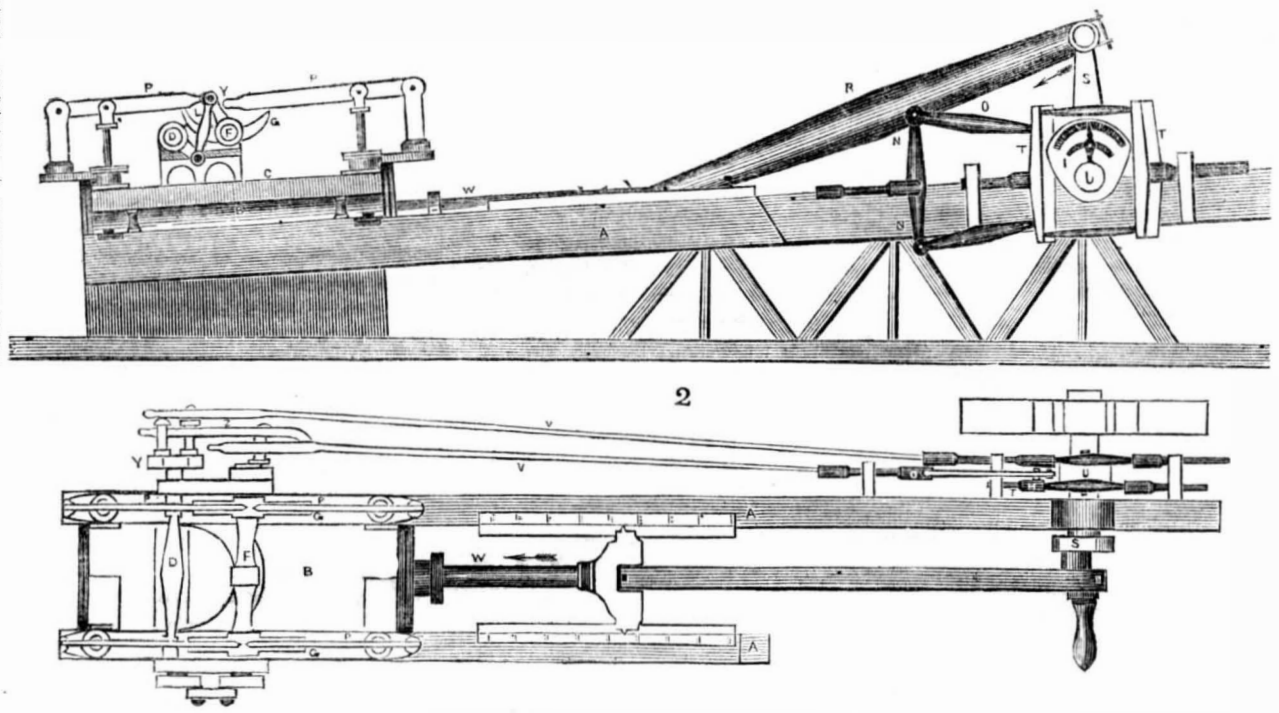
The Planet Saturn.

The planet Saturn, which moves in its orbit twenty-two thousand five hundred miles an hour, is more than three hours in moving the length of its diameter. A man moves the length of his in less than a second.

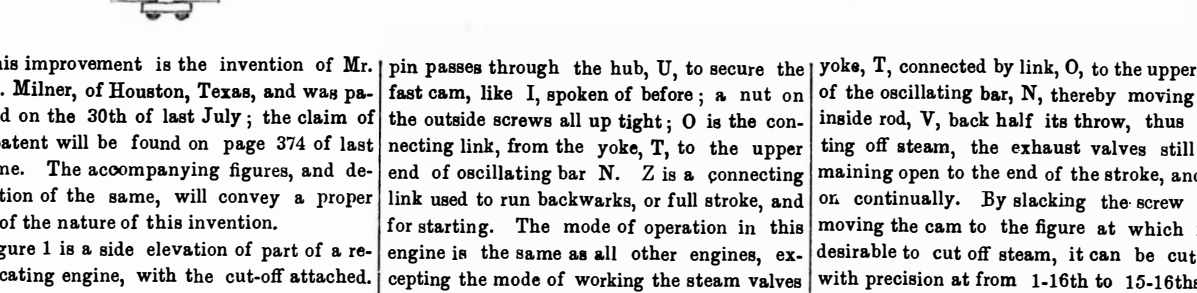
Stereotyping.

A caveat has been filed in the confidential archives of the Patent Office of the United States, by Mr. T. W. Haynes, editor of the Baptist Cyclopedia, of the city of New York, for a new process of stereotyping which has been submitted to the examination of some of the most competent stereotypers in America, and promises to become, in their judgment, in many respects, an important improvement in stereotyping. The process, however, for the present, is necessarily kept private, until suitable arrangements shall be completed to bring the invention fairly before the public. The business is soon to be established in this city, after which time a more particular notice of this invention will be given to the public.

MILNER'S CUT-OFF VALVE GEAR.---Figure 1.



2



This improvement is the invention of Mr. G. B. Milner, of Houston, Texas, and was patented on the 30th of last July ; the claim of the patent will be found on page 374 of last volume. The accompanying figures, and description of the same, will convey a proper idea of the nature of this invention.

Figure 1 is a side elevation of part of a reciprocating engine, with the cut-off attached. Figure 2 is a plan view. The same letters refer to like parts. A is the inclined cylinder timbers ; B is the cylinder ; C are the steam-chambers : W the piston rod ; R the pitman ; S the crank ; P are levers to admit steam on one side ; and P P are levers on the other side, to exhaust the steam ; D is a rock-shaft, with starting bar, Y, and crank attached ; L is a connecting link to unite two small cranks, (seen on fig. 2, at the outside, below, of the rocker, D ;) F is a rock-shaft, with a crank at both ends ; G G are two curved lifters ; V is a cam rod attached to the oscilating bar to operate the steam valves ; I is a movable cam, with a segmental slot in it—behind the cam, J, there is a fast cam (not seen) with a yoke on it ; T is the yoke of the movable cam, I ; U is a hub on the main shaft, J, fig. 1, (letter turned), on which is the main crank, S. A pin passes through the hub, U, to secure the fast cam, like I, spoken of before ; a nut on the outside screws all up tight ; O is the connecting link, from the yoke, T, to the upper end of oscillating bar N. Z is a connecting link used to run backwarks, or full stroke, and for starting. The mode of operation in this engine is the same as all other engines, excepting the mode of working the steam valves by the combined action of two D cams, the one fixed and the other moveable, operating on the oscillating bar, one at each end, connected by their respective yokes. The figures represent the engine to be just at the cut-off point, in the direction of the arrow, and the steam valve just closing, though the lever, P, is yet touching a little of the lifter, G. The exhaust valve is still open and will be so till the end of the stroke, when the fixed cam moves its yoke and the lower end of the oscilating bar, N, thereby operating the inside cam rod, V, half its throw, opening the steam valve, P, on the off-side, at the same instant it moves the outside, V, its full throw, closing one and opening the other of the exhaust valves, by the levers, P, (one on each side.) When the T head again arrives at the half stroke, the moveable cam, I, moves the cam yoke, T, connected by link, O, to the upper end of the oscillating bar, N, thereby moving the inside rod, V, back half its throw, thus cutting off steam, the exhaust valves still remaining open to the end of the stroke, and so on continually. By slacking the screw and moving the cam to the figure at which it is desirable to cut off steam, it can be cut off with precision at from 1-16th to 15-16ths of the stroke, enabling the engineer always to use all the steam he can make at any given pressure, and also to cut off at such a point as to be able to keep up steam without throttling it ; and as it is well known that boats on the Mississippi, with a load and a head wind, cannot work off all their steam with their fixed cut-offs, nor supply steam enough to allow full stroke ; they are obliged to lay too, or add pressure to their boilers to make head-way ; this invention, then, will add to the safety of boats and passengers ; for, by changing the cut-off, they can use all their steam, and go a-head ; also, when running with fair wind, light load, and favorable tide, they cannot make steam enough, they are obliged to throttle it, and lose much of its elastic force.

Any communication addressed, to G. B. Milner, as above, will be promptly answered.

Improvements in Gate Hinges.

Mr. George Dittenhaver, of Dresden, Ohio, has invented and taken measures to secure a patent for an improvement in common gate hinges, which is very useful and good. The improvement is on the eye of the loop part, which is secured to the gate, the pivot being fixed in the gate post, as usual. The shank of the loop is peculiarly constructed, and passes through the after-tree, and turns over with a lip, which is wedged in by a piece of hard wood, and most effectually prevents it from being drawn out. There is a flange which passes around and binds it to the edge of the after-tree. This improvement prevents the sagging down of the gate ftom its great weight and continual working on the hinges. The hinges are kept firm and secure in their places, and no difficulty is experienced by the drawing out of them from their places.

Newly Invented Gas Light.--New Source of Heat and Motive Power.

Application has been made for letters patent, both for the United States and England, for the protection of a cheap and brilliant gas, produced upon a new and scientific principle, which can be obtained at a cost less than one cent per 1000 feet. It will early be submitted to the public patronage. The process will far surpass, and entirely supersede every other means of producing gas, extant ; neither will the material, (like every other, past and in present use,) raise in value on account of an increased demand ; during which process a far more valuable article is produced than the gas—by which process not a particle of wood, coal, water, or vegetable matter is required, and the material can be obtained in any clime or place, however remote from civilization—a process far less indirect and precarious than the present absurd and enormous destruction of coal ; without any process of combustion,—comparatively speaking a self-acting and self-creating gas—called into action by an impulse of nature, without any expense of working and transportation of fuel—from whence there it derived a new motive power, new light, and heat, called into existence from the foundation of Nature—from whence there is a resource which is eternal, inexhaustible, and omnipresent.

George Cadwallader Blayney.
Fort Washita, C. N., Ark., Nov. 18th, 1850.

A weaver at Bradford, England, has been for some time employed, in weaving in a piece of cloth the whole of the New Testament. He has lately completed the four Gospels and has made some advances in the Acts of the Apostles.

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Scientific American

NEW YORK, DECEMBER 21, 1850.

City Railroads.

During the past two weeks, the New Yorkers have had a fine opportunity of indulging in the beauties of various kinds of weather, and the pleasures resulting therefrom. During the first of the weeks mentioned, it was "rain, rain, from morn till eve, and eve till morn." Our streets then gave evidence of that fatherly carefulness for which our city authorities are so distinguished, and for which they pay so much every year. Old Dutch cleanliness, some one will say; no such thing, we mean their strong predilection for swamp muck and turtle beds. Broadway causeway, in a rainy day, is a terrible "slough of despond." Boys might dive for eels near the Astor House, and mud turtles might recreat themselves in front of Trinity Church.

During the past week, the skies have been clear and the clouds have fled away, and to increase our street comforts, some will say, "the mud disappeared." Not so fast about the comforts, but all correct about the mud. The question about the comforts just lies in this, "whether is it better to carry the mud on your boots, or in your lungs and over all your clothes, in the shape of fine dust?" To tell the truth we prefer the mud, bad as it is. In dry weather, if there is the least breeze stirring, unless Broadway, our principal street, is kept deluged by water-sprinklers, it resembles a Zahara in miniature. No person can walk along the pavements with any degree of pleasure. We believe that there is not a christian city in the wide world which can glory in as dirty streets. It is not for the want of funds expended to keep them clean, either, but because of their miserable mismanagement. It is no doubt true, that the great number of stages, carts, and carriages running in our streets, a number so large, that no other city, of equal population can at all compare with it—causes a rapid accumulation of filth from abrasion of pavements, &c.; but, then, does not this demand a greater amount of labor to keep them clean, and are there not means appropriated for that purpose commensurate with our necessities? Yes; all this is true, but still, for all the cry that is continually raised about them, and for all the changes of city government which we have had, the evil has increased rather than diminished. A Boston gentleman, recently from Europe, informed us that the highways in England were much cleaner than the streets of New York. What is the remedy? Everybody knows that the streets can be kept clean, if our city authorities would do their duty. As one means to lessen the evil, as we have stated more than once before, we advocate a system of City Railroads. A measure of this kind was, we thought, already adopted by our Common Council; but, as that body is famous for sometimes "marching boldly up the hill, and boldly marching down again," we presume that, on this subject, they have come to the conclusion, at last, of walking on their heads, or amusing themselves by throwing somersets. The sooner we commence to adopt a judicious system of city railway travel, so much the better, for the longer we delay, the greater will be the difficulties to be overcome, because the opposition of private interests to such a scheme, are always becoming stronger. The time will, and must yet come, it cannot be otherwise in this progressive age, when a system of city railroads must be adopted, and why not now? It is wisdom to take advantage of circumstances, to lead the way, and not be driven by them. The remedy is in the hands of the people; whatever evils exist, they have themselves to blame, and if they like mud, dust, dirt, and tumult in our streets, in preference to cleanliness and genuine comfort, all good and well—we are sorry for it, for their own sakes, and ours too—for we are interested patriots in this question, not having yet arrived at that pinnacle of patriotism called *disinterested*—and we therefore conclude by saying to our fellow citizens, "we have done our duty, gentlemen, now go a-head and perform yours."

Electric Lights Again.

A new Electric Light, as we learn by our European exchanges, has been brought out in England, patented by a Mr. Allman. His apparatus consists of only two pieces, the one being a magnet, round which the wire is coiled, and which may be got up in such a manner as to form a handsome ornament, while the other is an upright piece of wire, on the top of which is placed the electrode, or combustible matter that is to give the light. The top of the electrode is ignited by being placed near the break of the conducting wire, and the light thus emitted is of almost intense kind. The whole operation may be compared to the process of a candlestick when the candle is always maintained at the same point. The magnet with the coil of wires serves for the place of the candlestick; the electrode, which in the present instance is a small cylindrical piece of carbon, not much thicker than a piece of boy's slate pencil, is fixed to the top of the upright wire; and as this combustible matter burns down, the magnet, which is originally fixed in its stand diagonally sinks down, and so forces up the "candle," keeping it at the proper point for ignition. When the candle is burnt down another can be replaced in the same way as with ordinary candles. Such is the apparatus that would be required in a shop or private family. To procure the electricity a battery would be required of greater or less power, of course, according to the amount of light that would be required.

This apparatus will never supersede either oil, candles, or camphene, for private families, and never will supersede gas for lighting cities. It must be more expensive and troublesome than the method now employed for general illuminating purposes.

We see by the Worcester Tribune, that Mr. Paine has been inducting the Editor into some of the secrets of his light. He affirms all that has been said about the importance of *the light* by the friends of Mr. P. How much will Mr. Paine charge for an apparatus to light one room? We don't care about knowing all its outs and ins; we want cheap light first. If it is so much more economical than other lights, why bring it on to New York, and you will find plenty of customers. There is no use of saying "it is so and so much cheaper than other lights;" bring it on and prove it. The editor of the Tribune gives "Carburetted Hydrogen" (our correspondent) a good thrashing, and tells a very funny story about him. It is all true, perhaps—but bring on your light, gentlemen, and let it have a fair trial.

We have concluded to accept no more of Carburetted Hydrogen's articles on this subject, because there is nothing new brought forth in them now. In all cases, the public cares not for this or that man or company's interests, but looks to the cheapness of the articles, which are wanted. Now, in the case of artificial light, if Mr. Paine produces a cheaper light than that produced by any other means now used, why, it will supersede them all; if not, his discovery will be of no benefit to the community. The editor of the Worcester Palladium endorses everything the editor of the Tribune has said about this light. We must say, however, that neither of them gives us any figures or fair experiments relative to its economic advantages. From what we know of the nature and quantity of compound gases to produce a good light, we cannot see how Mr. Paine can produce a cheaper light, than that produced by "spirit gas" or camphene.

Mechanical Drawing.

A young man writes to us, wishing to know where there is an academy in the New England States, which teaches mechanical drawing. The young man is a mechanic, who has just finished his apprenticeship, and wishes to know something in the world. We sincerely wish that all young mechanics had the same ambition. We do not know of a school that we could recommend to him, but no doubt there are quite a number. There are good advantages in New York for this purpose, but we advise young mechanics to take care about coming to the city. If he cannot get a school to suit himself, he must buy Minifie on Drawing, and teach himself in his spare hours. He must get a good drawing-board, T square, and a case of good instruments; it will cost him $20, to get all these, and then they will not be first-rate, by any means, but we would scarcely advise a less outlay at first.

It is very difficult to get young men to study drawing; it requires an exercise of patience, which the majority of young men do not possess. A patient man can instruct himself:—the master millwright of the Emperor of Russia was a shepherd until he was 23 years of age, after which he went and learned his trade, and taught himself to be one of the finest mechanical draftsmen in the world,—to others we say, go and do so likewise.

Great Exhibition.---English Patent Laws.

The attention which has been directed to the evils of the English Patent Laws, by the contemplated great Fair, is something which gives us no little satisfaction. Although we are the advocates of American inventors' rights, particularly, we are not confined in our sympathies; indeed, no generous person can be, they encircle all inventors. We therefore rejoice, in all sincerity, at the stand the English inventors have taken, in reference to an improvement in the British Patent Laws, and also at the progress they have already made in securing some great reforms.

Let us tell the English inventors what reform they want; first, then, abolish the present system altogether: let one patent embrace England, Scotland, and Ireland, and let it be understood as covering the imperial dominions, without putting in the city of Berwick-upon-Tweed, the Islands of Guernsey, &c., and all such nonsense, and then allow patents for the colonies to be taken out in the colonies. Do away with the huge wax-seal, and have an office with an intelligent scientific board, consisting of a good lawyer, a good practical mechanic, an architect, a chemist, and some subordinates, and let these examine applicants' claims, grant patents for all that is new—the whole expense not costing more than about £30 ($150.) Another improvement is, let government protect the patent by pursuing those that infringe, and not allow the patentees to pay for their patents, and protect them afterwards, as they now do. This last reform we recommend to the attention of our government. Inventors will willingly pay more for patents with this improvement in the Patent Laws.

Testing Iron Girders.

The iron girders for Paxton's great glass palace, at Hyde Park, London, are all tested by a Bramah press. The amount of the pressure, as a test, varies according to the different girders and the positions they are to occupy. Those supporting the galleries are tested at 22 and 15 tons, those for the roof at 9 tons. The weight required to break any of them would be about double the test, but they will not be subject to a strain above half of the test. The water apparatus for testing is ingenious, but the principle is old. There are to be 2,141 iron girders in the building, and each 24 feet span.

By the last accounts from Europe, the glaziers on the building had struck for higher wages: they were making 27s. per week, or about $7. Their places were soon filled by others.

Growth of the Human Nails.

I stained the roots of two of my finger nails on the first of last August, to find out the exact time a healthy nail took to form—in other words, to find out how often a man changed his finger nails. On the 14th of this month all the old nails had disappeared; thus it took exactly four months and fifteen days to form new nails. Allowing this period to be the average time for the complete renewal of the human nail, a man who lives to 70 years has had each nail renewed 186 times—in other words, he wears out 1860 finger nails in 70 years. In the four and a half months I could distinguish no difference in the periods of formation—the growth was gradual and systematic, from week to week, without any variation. I stained the nails with corrosive sublimate; the color was tawny, and was not the least affected with all its numerous washings and exposure to the air. My occupation is sedentary; the nails may grow faster on some and slower on other individuals, according to their constitutions, or the particular occupations in which they may be engaged. R.

New York, 1850.

Electrotype.

Among the number of patents on our list, this week, our readers will see one granted to Mr. George Mathiot, of Washington, for a new discovery in Electrotyping. This is one of the most valuable discoveries that has ever been made, as relating to this art, and its importance to the community, cannot be too highly magnified. Mr. Mathiot is attached to the U. S. Coast Survey, under Prof. Bache, and the acquisition of such an improvement by government, to be used in the Survey, will be the means of effecting a great saving in expenses. We hope that government will reward Mr. Mathiot handsomely for the use of his discovery. Our government has frequently displayed an unworthy spirit of parsimony where it should have displayed liberality, and liberality where it should have closed its purse; we hope that every meritorious discovery—proven so by fair test—which effects a saving in the expenses of Government, will meet after this with its just reward. Mr. Mathiot is the gentleman who has contributed, and now contributes the articles on the Voltaic Battery, in our columns, signed "Volta." We have seen no articles, in any work, to compare with them, in perspicuity, and compressed knowledge, relating to the subjects treated of.

In one of the articles on the Voltaic Battery, an inadvertent error crept in: the words, "sulphuret of mercury" were used instead of "mercury in the metallic form" for making the mercurial flood arrangement.

Change in the Post-Office.

We are gratified to learn that Mr. Geo. W. Jenkins has received the appointment of Secretary to the Post-Office department in this city, made vacant by the resignation of Mr. Chas. Burdett, who now acts in the capacity of confidential clerk to Mr. Kingsland, Mayor elect. We can readily endorse the discrimination of Mr. Brady, in this selection, as we know Mr. Jenkins to be a high-minded, competent, and deserving gentleman; no better selection could have been made from the many competent attaches of the post-office. We feel assured that he will discharge the duties of the position in a manner highly creditable to himself and to the interests of the department.

Form of the least Resistance.

In our last volume a number of articles were published respecting the form of least resistance, in which it was set forth that a new discovery had been made relative to the same. They were answered by another correspondent, who took opposite views of the subject. The first correspondent has written us more than once, requesting us to allow him space for further discussion, as he does not consider his points sufficiently controverted. We have refused the articles, because we have already allowed both sides as much room as, in our opinion, we could fairly devote to the discussion of an abstract proposition.

Broom Machinery.

Broom machinery and farming implements of every description are manufactured by Jacob Gray, at Scotia, Schenectady Co., N. Y. This is information to not a few correspondents, who have written to us on the subject.

The Importance of Correct Patent Specifications.

When Fourdrinier's invention of machinery for making endless paper was patented, owing to a mistake, the word "machines" was written "machine." The property was pirated, which led to litigation, and the patentee's funds were exhausted before they could establish their rights. They became bankrupt, and lost all the fruits of an invention on which they had spent £40,000.

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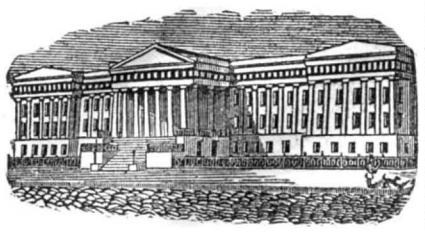

☞Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 27, 1850.

To Wm. D. Allen, of Durhamville, N. Y., for improved Balance Boiler feeder.

I claim having the piston with compartments and apertures, as described, passing completely through the boiler and working in double packing boxes in short cylinders, placed on opposite sides of the boiler, substantially as herein set forth.

To Solon Bingham, Jr., of Poestenkill, N. Y., for improvement in Buckles for Harness.

I claim the construction of a trace clasp, as a substitute for a buckle, for fastening together two straps of leather, by the use of a metal tongue fastened to one of the straps, having projecting from it pins or studs, fitted to enter into holes to be made therefor in the other strap, the tongue and strap one against and upon or near the other, the tongue and strap in this juxtaposition, by a slide or box enclosing them, the whole substantially as set forth in this specification.

To Wm. H. Hovey, of Hartford, Conn., for improvement in Bearings for Axles and Shafts.

I claim the combination of the sliding plate, having a conical seat, and the conical packing ring ring applied and secured to the journal box of a car or other axle, or of a machine shaft, in the manner substantially as herein described, for the purpose set forth.

To James Leffel, of Springfield, Ohio, for improvement in Lever Jacks.

I claim the hanging of the lever by links which permit the lever teeth to disengage themselves from those of the rack bar with which they are engaged, by simply raising the lever, and allow them to re-engage with a new set of teeth when the lever is depressed, substantially as herein set forth.

I also claim the method of connecting the pawl with the lever in such a manner that by simply working the latter, the rack bar, with the weight resting thereon, may be lowered, tooth by tooth, substantially as herein set forth.

To George Mathiot, of Washington, D. C., for improvement in Electrotyping.

I claim forming a heterogeneous substance on the surface of the metallic plate, by exposing it to the action of iodine, bromine, chlorine, or other chemical, capable of forming an insoluble compound with the metal, for the purpose herein set forth.

I also claim to expose the metallic plate to the action of light, after being acted on by a halogen element, substantially for the purpose of preventing the adhesion of the deposite, as specified.

I claim the use of iodine in the electrotype process, in the manner herein substantially set forth, and for the purpose specified.

To Samuel & Morten Pennock, of Kennett Square, Pa., for improvement in Seed Planters.

What we claim is the combination with the depositing tube and the bar which connects said tube with the body of the machine, the joint as above described, said joint being of such peculiar construction as to be complete and effective in itself, without any movable device whatever, and which admits of attaching or detaching said tube at pleasure, without the use of any kind of implement, or tool, or separate connecting bolt, or fastening, as before described.

To Dexter B. Rhodes, of Concord, N. Y., for improvement in Seed Planters.

I claim the upper and lower sliding bottoms (four) in combination with the adjustable side of the hoppers, operating in the manner and for the purpose substantially as herein described.

To F. D. Robinson, of Boston, Mass., for improvements in Sewing Machines.

I claim the combination of two needles, two thread guides, and a cloth holder, made to operate together, substantially in the manner and for the purpose as set forth.

And I also claim the improvement of making the needles with springs, and applying mouth-pieces, or presses, to them, and on each side of the flanch of the base plate, the whole being substantialiy as above described.

To Alex. Smith, of West Farms, N.Y., for improvements in the manufacture of two and three-ply Carpets.

I claim the weaving of two or three-ply ingrain carpets, by the employment of parti-colored warp and weft, operated by jacquard or other mechanical means, to form the figure, when the same colors in the warp and in the weft are caused to combine together, to form the same colored figure in the fabric, substantially as described.

To Henry B. Sommers, of Ithaca, N. Y., for apparatus attached to vessels for indicating the depth of water.

I claim the combination of a sounding chain or jointed rod, with an indicator on the deck of a vessel, operated by means of a cord, pulley, or other equivalents, so as to indicate the depth of water, whilst the boat is making headway, as herein described.

To Daniel H. Southworth, of New York, N. Y., for improvement in Planing Machines.

I claim, first, the attachment, either whole or in segments, of a narrow circular saw blade to the front of the periphery of an iron or other metallic planing wheel (properly countersunk for the purpose) in combination with the cleaning and planing cutters, so that the saw shall be stiffened and rendered free from trembling, shaking, or running in, and made to cut in advance of the planing-cutters to cleanse and level the surface of the plank or timber, that the planing cutters may, with facility, produce an extra smooth surface, and be cleared of timber, or slab, by the clearing cutters, as set forth, the attachment of the saw blade to the wheel, being such, by screws or otherwise, that the saw blade may be easily removed or taken off, for the purpose of turning the reverse face to the plank or timber, whenever the teeth on one side have become worn, dulled, or out of set from long usage against the timber.

Second, The clearing cutters (three) in combination with the saw and planing wheel arranged in the manner and for the purposes herein set forth and described.

To Jesse White & Jonathan Bundy, of Barnesville, Ohio, for improvement in elevating, cooling, and conveying flour.

We claim the method of elevating, conveying, and cooling flour or meal, by passing it by means of a blast through an air-trunk and head, constructed substantially as herein set forth.

[What is the Patent Office about? Mr. Sander's patent machine has been and is used to elevate grain, &c., by the same means.]

To Nelson D. White, of Winchendon, Mass., for improvement in machines for making Pill Boxes.

I claim the contrivance for supporting the stick, and feeding each stick forwards towards the cutters, the same consisting of the saddle and orifice (applied to the rotary block holder) the endless screw, the shaft, the spring, the bearing plate, fixed to the shaft, the pinion, and the stationary gear wheel, the whole being applied and made to operate together, substantially in the manner as above set forth.

I do not claim the employment of a circular saw for the purpose of separating portions of the stick, but I claim as my invention or improvement the combination of said saw, with the rotating series of sticks, or their rotating holding frame, substantially in the manner, and so that they shall be successfully operated upon by it as specified.

To Samuel H. Gilman, of Cincinnati, Ohio, for improved Cut-off motion for puppet valves.

I claim, first, raising and dropping at any desired point the puppet valves that admit steam to the cylinder by means of a lifter, which vibrates with and upon the usual rock-shaft, the said lifter being operated by a gravitating and counterbalancing toggle, as described, so that the lifter, in the manner described, or its equivalent, is fixed for raising the valve, and is depressed and allowed gradually and easily, to drop the valve, when the counterbalance of the toggle is operated by the adjustable stop, substantially as herein described.

To John Signer & T. N. Shipton, of Kishcoquillas Valley, Pa., for improvement in Seed Planters.

We claim dividing the drill teeth or depositing tubes into two separate sections, and hinging or connecting the two sections at their upper ends, in such a manner as to permit the longest or rear section to recede or turn on its connecting pin, while the upper or short section retains its proper position in relation to the drag bar and flexible conducting tube, and providing the upper or short section, with two arms having notches therein, which, when the two sections of the drill tooth are closed, become coincident with a notch formed in an arm projecting from the rear or longest section, into which is inserted a wooden pin, which it is intended shall break when the rear, or longest of the drill teeth, shall strike against a rock or other obstruction, and thus separate the sections, and permit the longest section to recede and clear itself from the obstruction, whilst the flexible conducting tube is held in its proper position by an oval loop on the inside of the section, as herein fully set forth and represented.

Second, We also claim providing the clutch plate with an additional row of teeth adjacent to the side beam of the frame, for engaging with a tooth projecting therefrom, for arresting the motion of the seeding rollers simultaneously with unlocking the axle from the propelling wheel, and thus stop the operation of the machine, as fully set forth.

DESIGNS.

To Charles A. Lambard, of Augusta, Me., for design for Stoves.

Pulverized Wood for Cattle.

About three years ago I had occasion to send my cart-horses frequently through a piece of coppice wood, and whenever it happened that they stopped within the reach of the rods, they would greedily devour every bough they could get at. This I noticed many times. At last I was led to examine the rods on which I had seen them feeding, and found them completely stripped of the branches, some of which were of a very considerable thickness. This led me to suppose that there must be some good qualities in the wood, and this consideration induced me to get some pulverized and given to my cart-horses, which experiment was repeated at several different times, until I was fully satisfied that it had no injurious effect on them. After this I was led to give it to my gig-horses with their corn; and having ascertained that it did them no injury, I had machinery prepared for reducing the wood for the purpose of food, and began to feed both cart and gig-horses, as also my cows and pigs, mixing a portion with all the food which was given them.

This practice I have continued for the last ten months. Previously to feeding my horses in this way, they had each three quarters of a peck of oats and beans given them per day, for which is now substituted three pints of barley per day. They are in equally fine condition as when fed in the usual way, and more playful and free in their work. Soon after the wood was mixed with the fodder given to the cows, their milk as well as their condition was much improved. For several weeks past, I have been feeding sheep with the pulverized wood, together with crushed Swedish turnips, and they also appear to improve by it. I have likewise fatted four pigs successively, mixing this food with barley meal, and the results have proved most satisfactory.—[Mr. Daniels in Chambers' Jour.

[The statement, however strange it may sound, is not so startling when we remembered that the woody matter of the trees, in its chemical nature, is nearly allied to starch, and that it always contains some nitrogen; so that, in reality, it furnishes the ordinary materials of food in another form. We presume, however, that white-wooded, not resinous trees, are those which furnish Mr. Daniels' cattle with the ligneous pulp they thrive so well upon.

Cattle, everybody knows, are fond of trees, and will eat up the tender branches within their reach, when carelessly permitted to have access to the orchard. It is presumed, that what instinct prompts them to devour, must be beneficial to them, but upon the other hand, we cannot judge of instinct in domestic animals, unless we observe very closely. A dog eats grass, after being long confined on the chain, but no one supposes that grass should be given as food to a dog. It is true that there is starch in trees; so is there whiskey, but that proves nothing. The above copied paragraphs should be received with great caution, for every man knows that there is a great difference in trees, yet no mention is made of the kind of wood used by Mr. Daniels. There was once a good trading Yankee who got out West, built a saw-mill, and after being on it two years advertised it for sale; and, to prompt some to buy, he stated that the saw-dust was excellent food for cattle when mixed with bran. He got a buyer, who, after six months' experience, came to him and said, that the saw-dust and bran had turned his oxen and cows from good plump animals into shingle-sided scare-crows, and he thought he had been deceived about the virtues of saw-dust fodder. "Oh," says his down-east friend, "you don't understand it—you must double the quantity of bran, and decrease by one-half your quantity of saw-dust."

The Steam Engine.

In that famous city which, at the mouth of the mysterious Nile, still kept in green remembrance the name of its Macedonian founder, lived Hiero the astronomer, who more than two thousand years ago wrote of the discovery of a machine moveable by the vapor of water. But while his words unquestionably described an attainable motion and an available force, it was doubtful whether the idea ever reached, and certain that it did not survive an experimental illustration of its possible practicability by Hiero himself. It was not until sixteen centuries of the Christian Era had gone by, that they found any further approximation to the idea of a steam engine, a claim to its invention having been made, although unwarrantably so, on behalf of a native of France, who lived about the year 1615, and it was not in reality until the felicitous and momentous image of separate condensation threw its image into the profound meditations of James Watt that they could acknowledge the mighty secret to have been unveiled, emancipated, and vivified.

In 1836, Dr. Lardner had hesitated to sanction the daring proposal of an unbroken run across the Atlantic from Liverpool to New York, while, at the same time, he had indulged in expectations of a speed of 120 miles an hour being obtained on railways.

This conjectural celerity of transport had never hithereto been approached, and it is certainly not so very desirable, for, irrespectively of other considerations, the health of the traveller, although insensible to such effects at the time, might sooner or later testify that the human body, with its solid and at the same time delicate structure, had not been appointed to dart as the swallow, or to project as the cannon ball. The steam engine, is in agriculture, in manufactures, in commerce, and in the furrows of the water as of the land, in the mill upon the surface, in the mine within the bowels of the earth, in the arsenal where slumber the dark thunderbolts of devastating war, in the printing-press, whence emanates the bright lightning of intellectual strength, forging the heaviest anchors, spinning the finest threads, cutting the hardest granite, weaving the softest tissue—this faithful, willing, and indefatigable slave, through the watches of the night and the glow of the day, executes the interminable tasks which our wants, our duties, our desires, yea, our very hydra-headed caprice command it to fulfil.—[Sheriff Gordon.

Articles from Jerusalem to the World's Fair.

The articles sent to the Great Fair from Jerusalem, will be animal skins, wool, and hair; specimens of native weaving and raw silk; oils; earths; indigo and other dyes; olive and other woods; finished work and raw materials, in stone and marbles.

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TO CORRESPONDENTS.

"R. E. S., of Ind."—We have forwarded you a copy of No. 11, Vol. 4, containing the specification of Woodworth's Patent.

"E. K. B., of N. Y."—There was no patent granted to Wm. Baker, in May 1842. The terms for subscriptions to the Scientific American are strictly in advance without distinction of person or sex.

"G. G., of Mass."—There is nothing patentable in your mode of constructing carriages. Essentially the same plan is now used on heavy wagons in England. It is not used here to any extent. We have seen them.

"W. M. B., of Ohio."—The draft you have sent is a centre discharging wheel. There are some which discharge at the periphery.

"F. T. F., of Vt."—We shipped an Alcott Lathe to you, via Brattleboro', by Adam's & Co's express last Saturday.

"W. J. R., of Va."—Address a letter to B. Pike & Sons, and they will give you all the information you require.

"R. C. S., of S. C."—A machine has just been patented by Mr. Beers, of Conn., (see list of claims in last number) which purports to be an excellent invention. Mr. A. K. Carter, of Newark N. J., is agent for Blanchard's machine, and would reply to any enquiries you have to make. We don't know the post office address of Mr. Patterson.

"J. A. C., of Pa."—You have asked a difficult question, very difficult to answer. There is great danger of A. not being able to secure a re-issue, unless he is at favor in court; and again, it would be difficult to get a court to sustain his re-issue. He could get no redress at any rate from those who used it before the re-issue, because they infringed no patent claim.

"G, D., of O."—The model of your invention came to hand on the 7th inst. The specification and drawings will be prepared in a few days, and the former sent to you for execution as soon as completed.

"J. R., of N. Y."—We should think you could obtain a patent upon your thresher; we do not know of any thing to prevent it. You had better send a model of suitable size, say 12 or 18 inches square.

"W. T. C., Engr., Va."—Yours, enclosing the subscription price of the Chronicle ($3), is received.

"J. C., of Ky."—Your communication is received and declined; we are, however, much obliged for your kindness: the same information was published in the last Volume of the Sci. Am.

"J. E. W., of Mo."—We will attend to your request next week. There are one or two things that must be altered for our own safety; caution is a bump of ours.

"L. D. S., of Conn."—The clock power, for the purpose stated, would have to be very powerful. We believe that it would be too expensive to pay, unless for a gentleman who would not grudge outlay. It can be done, and would be very useful, but not patentable.

"A. H. of Mo."—We have received your substitute for the crank, but do not consider it equal to the crank, neither do we believe the pulley to be equal to the crank in all things. We have never stated that it was, and if you read the articles to which you refer, carefully, you will find that we do not make such a statement as you attribute to us. See pages 125 and 141, Vol. 5, Sci. Am., for our public opinions on it.

"J. S. & W. F. F., of Conn."—To protect you for one year, you must file a caveat while making experiments: a notice would do this. We don't exactly understand your claims—"separate wheels and the jaw-boxes." We need a drawing or a model.

"W. H. E., of Mass."—We don't know where there is self-operating wool-jack in operation.

"H. G. B., of N. C."—A stone-ware pump cylinder would not be patentable. A change of material is not patentable. Glass pumps have been used and are used.

W. M. H., of Mo."—The claim to a patent only covers such parts of an invention as are known to be original, and forms but a small part of the specification.

"W. F. & Co., Ireland."—We shall forward you a pamphlet, descriptive of Mr. Bogardus' Eccentric Mill; it is used in each of the starch mills referred to by you. The corn starch is no better in quality than the wheat. The sweating process of treating hides has three advantages: 1st, it saves labor; 2nd, it is less injurious on the hide; 3rd, it is a saving of expense in the materials used before, and it is generally believed that the leather is far better.

"J. M. G., of Charleston, S. C."—We addressed you a letter on the 13th inst., in regard to your business. Would it not be well for you to write to Capt. L., requesting him to write us? We omitted to recommend this in our advices.

"G. J. W. H., of Mich."—There are such a variety of good bedstead fastenings in the market, that it is almost impossible to inform you which particular kind is the best. Mr. Z. C. Favor, of this city, has made an application for a patent on a very good kind, see also engraving of Mr. Taylor's, on page 172, Vol. 5, Sci. Am. You had better address Q. & Sons, concerning their paint, we don't know the cost of it.

"A. R. D., of Mass."—We have never tried to sound a bell in a condensed atmosphere, and have never seen it tried. We see no reason why it should sound louder to a person standing in the common atmosphere.

The specifications and drawings belonging to parties of the following initials, have been forwarded to the Patent Office since last acknowledged in the Scientific American:—

"J. P., of Ky.; W. & F., of N. Y.; S. T. S.. of Mass; S. B., of Pa.; H. W., of N. Y.; W. R., of Mass.; G. C., of N. Y.; W. P., of N. Y.; M, & G. of S. C.; J. R., of N. Y.; L. G., of N. Y.; T. H. B., of N. J., and D. F. P., of Conn.

We have a number of notices and communications which are unavoidably left over this week.

Money received on account of Patent Office business, since Dec. 11, 1850:—

J. R., of N. Y., $70; J. L. P., of Mass., $15; W. R., of Mass., $10; W. P., of N. Y., $25; C. B. H., of N. Y., $75; J. W. O., of O., $30; J. W., of N. Y., $30; L. G., of N. Y., $63; A. D. F. P., of Conn., $23.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fee for copying.

Standing Notice to Subscribers.

Henceforth, parties ordering the Scientific American will be supplied with the paper commencing at the time the order is received, unless they particularly mention that the back Numbers of the present Volume are desired. We have on hand over 3,000 sets of the Numbers already published, and shall be happy to furnish all new subscribers with complete sets whenever requested.

The present volume of the Scientific American will be the most valuable encyclopedia, or year book of inventions we have yet published, and every person ordering it should not fail to receive the back numbers, to render his volume complete.

Those desiring Volume 5 of the Scientific American, are informed that we are able to furnish a few complete volumes, (bound,) at $2,75 each. Also, we can send by mail sets complete, (unbound,) for $2. We would also say, that whenever our friends order numbers they have missed—we shall always send them if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine, and other Steam Engine Boilers.
THOS. PROSSER & SON, Patentees,
8tf 28 Platt st., New York.

UNITED PATENT OFFICE IN PARIS AND LONDON.—GARDISSAL & CO., 29 Boulevard St. Martin, Paris, and No. 9 Arthur st. west, city, London. Patents procured in Great Britain and on the Continent: "Le Brevet d'Invention," weekly journal, published by the same firm. 3tf

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" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

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Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

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TO IRON FOUNDERS, &c.—Fine ground and bolted Foundry Facing, viz.: Sea Coal, Charcoal, Lehigh, Soapstone, and Black Lead. Fire Clay, Fire Sand, Kaoline, and Fire Brick; also Iron and Brass Founder's superior Moulding Sand, in barrels, or otherwise, for sale by G. O. ROBERTSON, New York. City Office, 4 Liberty Place, Liberty street, near the Post Office. 13 8*

WATER-PROOF BLACKING—G. R. Townsley having received Diplomas from the various Fairs, where his celebrated Water-proof Blacking has been exhibited, takes this method of informing the public that he continues the manufacture of it at Springfield, Mass. Each box of blacking contains a sufficient quantity to last one person for six months, and it is warranted to render boots impervious to water, gives a good polish, and is a preservative to leather. Address G. R. TOWNSLEY, Springfield, Mass.—A sample may be seen at this Office. 18 4*

FOR SALE—A good second-hand Steam Engine, 8 inch cylinder, 32 inch stroke, with one boiler, 3 feet diameter, 22 feet long, with one 16 inch flue, refitted in good order. CHUTE, BROTHERS,
134* Schenectady, N. Y.

AMERICAN CAST-STEEL.—The Adirondac Steel Company have re-built their works that were recently destroyed by fire, and are now manufacturing an improved article entirely from home material, as low in price, and warranted equal to any imported steel in market. All sizes Steel, from 1-4 inch to 4 inches square, and from 1-2 inch to 12 inches wide, can be supplied. For sale at the Company's Warehouse, by QUINCY & DELAPIERRE,
14 4* 81 John st., N. Y.

FOR SALE—One second-hand steam engine, 10 horse power, in good condition, has run only 4 years, with a 3 feet boiler, two flues, and all appendages complete. It can be seen running for a few days, after which it will be taken down and a 25 horse engine put in its place; price $800, cash; it will be shipped to the first order enclosing a draft. Address, post-paid, 4 Howard st, New Haven, Conn.
14 2* AARON KILBORN.

JUST PUBLISHED—The American Practical Mechanic's Pocket Book and Almanac; or Scientic Year Book of Facts, for 1851.—108 pages of closely printed matter, containing 36 mechanical and scientific tables, and 240 articles on as many different subjects, on the compounding, working, and adaptation to the use of metals, cements, machinery, gases, gas meters, chemistry, and the mechanical arts generally, remarks on the Patent Laws of all the world; World's Fair in London; a Calendar and Almanac for 1851. Sold by all publication agents and booksellers. Price—in paper covers, 25 cents; in muslin binding, 37 1-2 cents; in leather pocket-books, 50 cts. Wholesale to agents, in paper, $15 per hundred; in muslin, $25 per hundred; in leather pocket-books, $35 per hundred. Published by KINGSLEY & LONGBOTTOM, 235 Broadway, N. Y. 1*

BARNUM'S PATENT PLANING MACHINE.—These machines, while they possess equal facilities with any other, for planing coarse lumber for flooring, &c., removes all the objections urged against machine planing, for ship and steamboat building, or fine ceiling, &c., by finishing the material with the grain, fully equal to hand planing, leaving no indentations on the surface of the board (as in all machines using pressure roll-ers in planing, by the chips and knots collected passing between the planed surface and weighted feed rollers, thereby destroying fine work, designed for painting, &c.) as there is no appliance whatever on the planed surface. Contracts may now be made for their construction or use, or for the formation of a joint stock company or companies, in any part of the U. S., to successfully prosecute the business by applying to DANIEL BARNUM, Snowden's Wharf, Philadelphia, where the machines may be seen in constant operation. 14 6*

DICK'S GREAT POWER PRESS.—The public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to execute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Sealing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods—Cotton, Hay, Tobacco, and Cider Presses; Flaxseed, Lard, and Sperm Oil Presses; Stump Extractors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required by any other machine.
WILLIAM B. LEONARD, Agent,
13tf No. 66 Beaver st., New York City.

COTTON MACHINERY FOR SALE—Viz. 4 filling frames, 144 spindles each; dead spindle, nearly new; 1 three head drawing frame, with extra rolls; 1 Mason's speeder, 16 strand; 1 lapper; 1 cone willower; 1 band machine; 1 bundling press; 1 warper—on very reasonable terms, by ELI WHITNEY.
New Haven, Nov., 1850. 9 6*

GURLEY'S IMPROVED SAW GUMMERS—for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st., N. Y. 10 6

SCRANTON & PARSHLEY,—New Haven, Conn., will have finished by the 15th of December, 12 Engine Lathes of 8, 10 and 12 feet beds, and weigh 1500, 1650, and 1800 lbs; price $200, $220 and $240. These Lathes are from a new set of patterns, and are greatly improved from their former small size lathes; they swing 21 inches, and have back and screw gearing, centre rest, follow rest, drill, chuck and overhead reversing pulleys, all hung in a cast iron frame, ready for use. On and after the first of Dec., by addressing as above (post paid) cuts can be had of these, with index card, showing the different pitch threads that these lathes will cut.

Two of the power planers heretofore advertised in this paper, are now ready to ship to the first order; they weigh from 4500 to 4600 lbs., when finished. 9tf

A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 6m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
9tf Painters and Chemists

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 10tf

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. These lathes are simple in construction, not liable to get out of repair, and will do enough more than other lathes, in three months' use, to pay their cost. One of them may be seen at the office of Munn & Co., New York. Price of Lathe for turning broom and hoe handles, rake stales, scythe snaths, windsor and cottage chair legs and pillars, $100, with one set of tools; $125 with two sets. Lathe for turning chair spindles, whip stocks, gun rods, &c., complete, $75. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 9 3m

IMPORTANT NOTICE TO CONFECTIONARY MAKERS—Whereas, a patent was granted to the undersigned, Oct. 8th, 1850, for an improvement in the manufacture of Comfits, and from certain knowledge which he has received, he believes that parties are using it without his consent. Vigorous measures are now being taken to ascertain who the unprincipled parties are, in order that they may be dealt with according to law. This notice is to warn all not to infringe the patent, as it is not the intention of the patentee to dispose of rights. Parties using it will have no authority. W. H. HOLT, Patentee.
Hartford, Conn., Nov. 25, 1850. 11 8*

THE SUBSCRIBER is now finishing four 14 horse engines, with boiler and apparatus all complete—price $1200 each. Several 6 horse engines extremely low; also, several of smaller capacity, complete; also, several power planers, now finishing.—Galvanized chain for water elevators, and all fixtures—price low—wholesale and retail. Orders, post-paid, will receive prompt attention. AARON KILBORN.
No. 4 Howard st., New Haven, Conn. 11 6*

MACHINES FOR CUTTING SHINGLES. The extraordinary success of Wood's Patent Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights remain unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

A MANUFACTURER WANTED.—I wish to employ for a term of years, a man of industrious habits, good moral character, not more than 40 years of age, qualified to manage and superintend hands in a cotton and spinning factory, and who is a first rate carder and spinner. The location is a healthy one, machinery propelled by water, 700 to 1000 spindles; salary liberal. Nothing short of the most satisfactory recommendations will be considered. Address the subscriber, immediately, at McMinnville, Tenn. WILLIAM BLACK.
Central Factory, Tenn., Nov. 25, 1850. 12 4

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
7tf Office 5 Wall street, New York.

RAILROAD CAR MANUFACTORY.—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
5 tf THOMAS J. FALES.

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

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Scientific Museum.

Poison Sausages.

German sausages are formed of blood, brains, liver, pork, flour, &c., and, with spice, are forced into an intestine, boiled, and finally smoked. If the smoking is not efficiently performed, the sausages ferment, grow soft, and slightly pale in the middle; and in this state they occasion, in the bodies of those who eat them, a series of remarkable changes, followed by death. The blood and muscles of the sausage-poisoned man gradually waste, and so do all the other organs, susceptible of putrefaction. The patient suffers a horrible sensation of drying up; his saliva becomes viscous, his frame sinks to the condition of a mummy; he then dies, and his corpse, which is as stiff as if it was frozen, contains only fat, tendons, bones, and a few other substances incapable of putrefying in the ordinary conditions of the body.

The poisonous power of fermenting sausages is conceived to depend on two circumstances; first, that the atoms of the organic matter of which they consist, are in a state of chemical movement or transposition; and, secondly, that these moving molecules can impart their motion to the elements of any analogous compounds with which they may be brought in contact. This is held to be the true reason, the same as yeast,—which *is* gluten in a state of change—which can, by mere contact with saccharine solution, induce the transformation of sugar into alcohol and carbonic acid gas; and just as putrefying flesh will, in like manner, by contact, as it has often happened at the dissecting table, cause solutions of organic matter to ferment; so may these sausages bring about, in the blood and tissues of those who eat them, a state of dissolution analogous to their own. Organic matter becomes inocuous when fermentation ceases; boiling, therefore, restores poisonous sausages, or if boiling is not resorted to they should be steeped in alcohol, which has the same effect. On this subject a great deal remains to be learned, because some individuals seem to offer resistance to almost every noxious influence—some strong men have fallen victims to poisonous sausages, while others who were apparently feeble, have partaken of them with impunity. Many people have been poisoned by eating cheese, the same kind of influence contained in the cheese must be analogous to that in the poisoned sausage.

In fermentation, the molecules of a body are merely transposed and re-combined in simpler groups; in decay, oxygen is absorbed, as in the combustion of coals. Fermentation is called putrefaction when the gas produced has a disagreeable smell. Sugar is said to ferment, because the resultants are alcohol and carbonic acid gas; while flesh is said to putrefy because its sulphur and phosphorous are evolved in combination with hydrogen, which produce a disagreeable smell, and not only disagreeable but unhealthy.

Improvements in the Manufacture of Flax in Ireland.

A large company has been formed in the North of Ireland, at the head of which is Lord Talbot, for the purpose of carrying out some recent improvements, which appear to be good ones. One is an improvement by which the tedious and costly process of steeping is entirely superseded. No chemical agents are employed, and the fibre is handed over to the spinner in a perfectly natural and unimpaired state, denuded of the filth and other deteriorating properties, which formerly marred its value. The inventor of this process is a gentleman named Donlan. Hardly less important is the invention of the Chevalier Claussen, by which the cold feel of linen is obviated, and the warmth of cotton or woollen is imparted to unsteeped flax. Alluding to this great discovery, the Morning Chronicle says, that "it possesses all the warmth of wool, the softness of cotton, and the glossiness of silk, and so closely resembles these several fabrics, both to the eye and the touch, that we should neither credit the fact ourselves, nor task the faith of our readers by the assertion, had we not before us actual samples of the result produced, exhibiting, in one and the same bundle of fibres, the raw flax at one end, the *quasi*-silk or cotton at the other." Not the least strange feature connected with these announcements is the fact that the existing machinery of the cotton mill is applicable to the production of the flax into yarn.

[This flax cotton, as it is called, we have seen before, and the man is in Ireland who produced it here. There is an American patent for the manner of producing it: the inventor is R. Patterson.

Hydrostatics.

(Continued from page 104.)

FIG. 11.

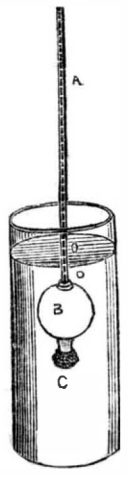
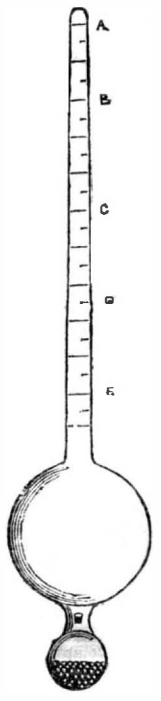


FIG. 12.



GRAVITY OF LIQUIDS.—There is a great difference in the gravity of liquids. Thus a pound of salt can easily be dissolved in water without doubling the volume of water: thus, if a pound of salt be added to a pound of water, there will be two pounds of liquid, but the volume of water will not be double of what it was before the salt was added. It thus must have a greater specific gravity when salt than when fresh. It is the same with many kinds of liquids. To test the specific gravity (strength, as it is commonly called) of different fluids, instruments termed "hydrometers" are employed: the instrument, figure 11, is one of these; it consists of a hollow glass ball, B, with a smaller ball, C, with fine shot in it, which, from its superior weight, serves to keep the instrument in a vertical position to whatever depth it may be immersed in the liquid; A D is the tubular stem of the large bulb, on which are marked divisions into equal parts, to indicate the depth which the bulbs sink into the liquid. The deeper it sinks the liquid becomes lighter, or of less specific gravity, and the higher the stem, A, is above the surface, O, the greater will be the specific gravity of the liquid. There are four hydrometres, which are well known—Baume's, Carter's, Twaddle's, and Guy Lussac's. Twaddle's is used extensively in Britain, Baume's in France, and both are used in America; their prices vary from 50 cents to $9, according as they are mounted. They are used for testing the strength of spirits, acids, and syrups; hollow beads are often used for testing spirits, especially in Britain.

LACTOMETER.—This instrument, fig. 12, is an instrument for testing the quality of milk by its specific gravity. A tin tube accompanies the instrument, which is of a diameter a little more than the large bulb, and is a little deeper; this is filled with the milk to be tested, and the lactometer is set into the liquid. The best milk should support the tubular stem out of the liquid until the surface of the milk should be at E. A is the specific gravity of water, B ¼ milk, ¾ water, C ½ milk and water, and E pure milk; superior milk will elevate the tube above E. This instrument costs about $1. We believe that every farmer should own and use one.

It is to be regretted that instruments of this kind are not more generally employed; in conducting any business where a knowledge of the specific gravity of fluids is a desideratum,—no one should be without a hydrometer. In the Bleach-field and Dye-work they are indispensable, but often mis-applied in the dye-work, especially in dyeing Turkey-red, for the mixtures of oil and alkali are tested, which only tells their mixed strength, without telling the respective gravities of the oil and the soda. This can be easily determined by measure, and testing both separately first, and then testing the saponacious liquor afterwards.

To Take a Plaster of Paris Cast from a Living Face.

This is often done as a mould for a bust, or to preserve a likeness of a person—the art requires only a little care. Let the person, a mould of whose face is to be taken, lay down upon their back, let the hair be tied back, or otherwise kept back by grease, or by flour dough placed on it; grease the eye-brows, and, if necessary, the beard and whiskers; also anoint the rest of the face with sweet oil. Then place a quill in each nostril, keeping it there with dough. Tie a towel round the face and make it fit tight with dough also. The patient being thus prepared, mix up the required quantity of plaster of Paris, with warm water, and just as it is ready to set pour it upon the face, taking care that the eyes and mouth are closed, and the outer ends of the quills above the plaster. Use a pallet knife to spread the plaster evenly over all parts of the face, until a coat is formed half an inch or more in thickness. In about two minutes it will set sufficiently hard to be removed. When dry and well greased, a cast in plaster may be taken from the mould, or if wetted, a cast in wax may be taken with equal facility. A little warm water will remove the dough, &c., from the face. In this manner casts are often taken of tumors and skin diseases, the wax casts being afterwards colored. For wax casts, a good composition is white wax, 1 pound; turpentine in lumps, 2 ounces; flake white, 2 ounces, and vermillion to color the whole.—[Francis' Chemical Experiments.

To Render Cloth Incombustible.

Dissolve borax in hot water, soak the clothing in the liquid and let it dry. It will now be impossible to inflame it, although it will burn away by slow combustion. Alum has been recommended for the same purpose, but it is more injurious to the clothing. The carbonate of potass may also be used, but is apt to contract moisture from the air, and thus render the clothes damp.—[Ibid.

New Explosive Substance.

PYROGLYCERIN.—M. Sobrero has given this name to a compound which he obtained by treating glycerin with a mixture of nitric and sulphuric acids, in the same proportions as for preparing gun-cotton. This product is liquid, and explodes very violently; its taste is very distinctly bitter, and it is a very active poison; two or three centigrammes, (about the tenth of a grain,) immediately killed a dog. It is a powerful oxidizer; mixed with nitric acid it forms a kind of aqua regia. It has not been analyzed, but is supposed to contain nitric acid.

Glycerin is an oxide of glycerule, the sweet principle of oils; and has recently been used in medicine for deafness and some forms of cutaneous diseases.

OXYGEN MAGNETIC.—Mr. Farady at the last meeting of the Royal Institute, announced to the members present his discovery that oxygen is magnetic, that this property of the gas is effected by heat, and that he believes the diurnal variation of the magnetic needle to be due to the action of solar heat on this newly-discovered character of oxygen—the important constituent of the atmosphere. M. Bequerel, also, has recently directed attention to a somewhat similar conclusion in a communication which he addressed to the Academy of Science.

A singular instance of resuscitation occurred lately at the British Museum. A certain snail, a native of Egypt, which had been glued down to a card, and confined in a close glass case, actually came to life again recently, and was found by the astonished "custos" promenading about in his narrow domain.

There is considerable gallic acid in apples, this turns black on iron.

LITERARY NOTICES.

FRANCIS' CHEMICAL EXPERIMENTS.—This is the title of a book published by Daniels & Smith, Philadelphia: price $1,25. It is a re-publication of an English work, which we have long known as the most valuable book of the kind in print. It contains all the experiments of Dalton, with a great deal more of intrinsic value; it is useful to every man, as it treats practically upon almost every subject in the arts, where chemistry has anything to do with them. This book we heartily commend as a useful one to every family in our land. We cannot commend it better than to publish, as we have done this week, a few receipts from its columns.

MIFFLIN ON RAILWAY CURVES AND TANGENTS.—This is a small but learned work on practical engineering, by Samuel W. Mifflin, C. E. It treats of the methods of describing and adjusting Railway Curves and Tangents, as practiced by the engineers of Pennsylvania. All difficult calculations are dispensed with, and even tabular statements, and the author states that "there is nothing in it which may not be remembered by an assistant after a short practice." The price is $1: published by Daniels & Smith, Philadelphia.

AN OUTLINE OF MECHANICAL ENGINEERING.—This is the title of a new work on the above subject, which we hope will meet with great success, because the drawings which accompany it are the best that we have ever seen in any American work, with but one exception, and that one was not completed. The drawings are upon good drawing-paper, are large, and are adapted for working to scale: the conductor of it is Frederick Mone, of this city. Two parts have already been published, containing splendid drawings of a steam engine of 12 horse power, slotting machinery, &c. Each part costs $1; and to every practical machinist and engineer, we say this is a work for you. It is sold by all the booksellers in our city.

THE WESTERN WORLD.—Probably there are but few of our readers who have never seen a copy of the monthly Western World, a paper published in this city, and edited with ability by J. F. Bridge, Esq., a gentleman favorably known, by every one who knows him at all. The Western World has been published but about four years, and we are informed has attained the enormous circulation of 75,000 regular subscribers. It has been published, heretofore, at 50 cents per annum, and issued only monthly, but after the first of January next, it is to be published weekly, at the same price per annum, 50 cents, and to be increased in size to nearly double that of the monthly, and printed on good paper. Who will not take a newspaper, when they can get one for 50 cents a-year, (less than a cent a number), which will contain all the latest news, as well as miscellaneous matter suitable for family reading? Address J. F. Bridge, Editor, Broadway, N. Y.

THE RAILWAY GUIDE, for December, by Curran Dinsmore, 138 Fulton street. This useful work has made its appearance for this month, and if possible, is more complete than ever. We commend it to every traveller. Price 12 1-2 cents.

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Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon the subject ever issued, and contains about ninety engravings—price 75 cents.

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